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After Small Budget Gains, Grim Forecasts for R&D

Science and technology were among the favored few in the budget the White House sent to Congress last month. But, in total, the S&T gains were actually small—just a step ahead of the inflation rate—while indications of downturns in coming years continue to accumulate.

"The good news on deficit reduction heralds tough times ahead for the nation's R&D investments," Rep. George Brown (D-Calif.), Chairman of the House Science, Space, and Technology Committee, forecast in his annual commentary on the Presidential budget. "The stringency of budget caps," Brown said, "has seriously squeezed funding for a number of worthwhile science programs in FY '95, and the long-term outlook for many science and R&D budgets is very grim."

The Congressman was particularly downcast about the Administration's proposal for NASA, one of the few losers among the research agencies—going down next year by \$250

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million in the Clinton budget. Brown described the 1995 NASA budget as "too low to support the vigorous space program envisaged by the Administration and by NASA; the worse news," he said, "is that the future years will show even greater budgetary erosion in the NASA budget."

The way out, of course, though Brown didn't say so, would be to terminate the Space Station. The White House, however, opposes that remedy, not out of affection for the useless venture, but because of the depression in aerospace. As a result, all NASA projects exist on famine rations.

The underlying mechanics of the current wave of R&D pessimism are detailed by the Science Policy Research Division of the Congressional Research Service (CRS) in an analysis issued February 14, *R&D Priority Setting and Consolidation in Science Budgeting* [14 pp; available through Representatives and Senators, who can order copies from CRS; cite the Congressional Research Service and Publication Order Code IB94009].

Referring to the five-year deficit-reduction treaty adopted last year by the White House and Congress, the CRS report states: "Limits are being placed on increases in discretionary spending, which is projected to decline from 37 percent of total outlays in FY 1994 to about 31.5 percent in FY 1998."

"As the discretionary portion of the budget declines," the report points out, "various interests compete more vigorously

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Mrs. Clinton Assures NIH *Of Basic-Research Support*

Hillary Rodham Clinton undertook a mission of conciliation to the National Institutes of Health last month, assuring a packed auditorium that basic biomedical research holds a valued place in the Administration's health-care plans and budget priorities.

The First Lady played on the high points—President Clinton's well-credentialed appointees for health-related posts at NIH and elsewhere, a seemingly respectable budget increase proposed for NIH next year, and the special provisions in the Administration's health-reform plans for financing academic health centers.

She neglected, however, to mention that last year Clinton proposed a ground-losing token increase in the NIH budget,

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In Brief

The National Academy of Engineering regressed further into the dark ages last month with its annual elections, which this time brought in 77 men and 2 women, thus raising the female count to 29 out of a total membership of 1732. Last year, the Engineers elected 4 women. An NAE announcement says, "Election to the Academy is among the highest professional distinctions accorded an engineer." Among the elect: Presidential Science Advisor John Gibbons. In comparison to the NAE, the adjacent National Academy of Sciences is in the vanguard of enlightenment, with 76 women among its 1683 members, as of last spring's election. Both Academies routinely spout off about the urgency of bringing more women into science and engineering and the importance of role models for inspiring students.

UNESCO has announced the termination of its quarterly journal *Impact of science on society*, after 168 issues published over 42 years. Citing costs and a quest for better means of communicating with the public, the Paris-based agency says it will come out early this year with a new publication, *World Science Report*, described as a biennial that "will examine the role of science in the world, its organization and recent trends in scientific research."

"We've had 40 years of science dominated by physicists, space scientists, and engineers," said Donald N. Langenberg, Chancellor, University of Maryland, in a written statement hailing the election of a life scientist, Rita R. Colwell, as President-elect of the American Association for the Advancement of Science. Langenberg, a physicist, deemed her election "particularly significant, in the era of genetic engineering." Colwell heads the University of Maryland's Biotechnology Institute.

... Fairytales About Bill Clinton and the NIH Budget

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and that the only money for NIH mentioned in his health-reform legislation is \$400 million targeted for preventive research—a brand of inquiry that grates on Bethesda's pure-science ethos. The speech, obviously crafted by ghosts sensitive to the anxieties of the biomedical-research community, was followed by robust applause, but no question period.

Mrs. Clinton went to Bethesda for two closely related reasons: the White House needs all the allies it can muster for the coming showdown over its health-reform proposals, and the basic health sciences have received no more than a nod in the Clintons' minutely detailed proposals for remaking the American health-care system.

Rattled by what they perceive as Presidential neglect, the leaders of the biomedical research community, including some of senior chiefs in Bethesda, have been pouting. This is normal for them in any season, good or bad, but the sounds of dismay and complaints of neglect have intensified as the Clinton Administration enters its second year. Discontent among scientists is not the worst problem confronting the Clintons, but why ignore it?

Larded with praise of the benefits produced by basic medical research, the First Lady's address played to the professional pride of the 500 or so NIH researchers and administrators invited for the occasion. She dispensed balm in fire-hose volume, even pointing out a previously unremarked "first" in Presidential appointments: research universities were the prior places of employment for three of the Administration's top health officials, all present—NIH Director Harold Varmus, Health and Human Services Secretary Donna Shalala, and HHS Assistant Secretary for Health Philip Lee.

Noting the recent death of Nobelist Howard Temin, Mrs. Clinton lauded him as "one of our most passionate advocates of basic research," which she described as an essential part of health-care reform. In one of the few attempts at humor in an earnestly delivered address, she referred to the pre-speech briefing she had received on genetic links to disease, and quipped that "we will soon discover we all have pre-existing conditions and are all totally uninsurable."

"So, if there is no other reason for the research and scientific community to support universal health care," she said, "do it out of self interest so that you, too, will have insurance when we reach the point where we know everything there is to know about what diseases we are genetically predisposed to incurring."

Then she took up the subject of Bill Clinton and the financing of biomedical research, stating that "For much of the past decade, biomedical research has been neglected and underfunded and even unappreciated, and the President intends to fix that."

Invoking the memory of Vannevar Bush, the revered post-war apostle of government support of basic research as the underpinning of beneficial applications, Mrs. Clinton

said: "In keeping with that philosophy, the Clinton Administration has provided new resources in the past year for the research enterprise here at NIH. In fiscal 1994," she continued, "the President and Congress increased the NIH budget by \$631 million over fiscal 1993. In the face of fierce spending restraints, the President has proposed another \$517 million increase for fiscal 1995, most of it for basic research."

These numbers require close examination, which SGR will provide: Since the US Treasury doesn't write checks without the approval of both the President and the Congress, the reference to a \$631-million increase over fiscal 1993 is technically accurate. But the reality is that in February 1993, Clinton, inheriting a FY 1993 NIH budget of \$10.3 billion, proposed an increase of a mere \$342 million for FY 1994. Because of internal shufflings proposed for that money, including a large increase for AIDS research, the Clinton budget would actually have reduced funding for several NIH institutes.

Elsewhere in the biomedical world, these goliath sums would be regarded with awe and received with profound gratitude. But in the financially ravenous American biomedical community, the proposed increase was considered a trifle, indicative of the Administration's indifference to biomedical science.

The biomedical lobbies swiftly mobilized and after hearing their customary forecasts of doom, Congress increased the budget by the \$631 million referred to by Mrs. Clinton, and the White House tagged along. The sequence was more or less in line with the traditional practice of the President proposing modest growth for NIH in anticipation of Congressional generosity.

The \$517-million increase proposed for fiscal 1995 may have been calibrated in recognition of that tradition. But it works out to a mere 4.7 percent increase—a touch above the biomedical inflation rate, hardly fulfilling Mrs. Clinton's assurance of the Presidential intention to fix the finances of NIH. And much of the increase is already spoken for, if the President's budget plan is adopted.

Thus, Mrs. Clinton stated: "The President also believes in establishing priorities for research that will provide direc-

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Editor and Publisher

Daniel S. Greenberg

Associate Publisher

Wanda J. Reif

Circulation Manager

Glen D. Grant

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... Science Faces Competition With Social Programs

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to secure a larger portion in their favor." In this competition, R&D fared relatively well, with the President's 1995 budget, for the fiscal year that begins next October 1, proposing an increase of 0.5 percent in the R&D share of discretionary spending.

The proposed increase, of about \$2 billion, would raise R&D spending to \$73 billion. That's a mere drop in an ocean of annual federal spending now totaling around \$1.5 trillion—and thus hopes naively flourish for another, perhaps bigger, increase next year. But the chances for growth will actually decrease, the CRS report predicts, as the discretionary share of the budget declines further and competition intensifies.

The report, by Genevieve J. Knezo, observes that R&D programs "increasingly will compete with funding for public infrastructure, housing, discretionary social services programs, and transportation, as policymakers not only seek to use science to meet specific agency missions but also to serve broader national goals."

Knezo adds: "These pressures, together with deficit reduction and budget cutting activities, as well as actions to institute performance review, have added pressures to moves to prioritize, coordinate, and consolidate R&D funding."

On top of that, the interests competing with science for federal money all take naturally to the political route in seeking their goals, raising money for candidates they favor and mobilizing votes. Space, health care, and military R&D, of course, do the same. But that's not true of the practitioners of academic research, who have never done more than flirt with elective politics as a means of winning favor.

Chairman Brown's analysis suggested new grounds for gloom in the R&D economy, asserting, for example, that the much-touted Clinton shift from military to civilian R&D is less than claimed. The changing balance, he said, "represents

no healthy growth in non-defense R&D but stagnation in defense spending.

"As a nation," he said, "we will continue to spend less of our national income on non-defense R&D than we did from the mid-1960s through 1980. The FY 1995 Presidential request demonstrates once again that science, space, and technology programs—whose payoffs, no matter how valuable, tend to be longer term and intangible in the near term—are particularly vulnerable to shortsighted budget-cutting efforts."

A more restrained, though not much cheerier, assessment of R&D finance was issued by the National Science Board in a foreword to the latest edition of *Science Indicators* [see Pages 4 and 8]. "Total national R&D expenditures, adjusted for inflation, rose rapidly from the mid-seventies through the first half of the eighties," the Board observes. "However, since 1985, they have been virtually flat." The Board goes on to note a longterm decline in the rate of growth in industrial research, and points out that though the US "still leads the world in total national and industrial R&D spending ... there are concerns about US performance in the global context.

"Other countries are closing the gap with—or are even leading—the United States by some measures," the Board stated, referring, mainly, to higher proportions of civilian versus military research in Japan and Germany.

"Newly industrialized nations," the Board's assessment continues, "have sharply increased their investment in science and engineering. As one result, in 1991, the combined natural science and engineering baccalaureates of six Asian nations exceeded those of North America and Europe taken together."

The torrent of statistics arising from science and technology provide opportunities for composing many interpretations. These days, they are invariably gloomy about the present and even gloomier about the future.

Mrs. Clinton at NIH

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tion without tying hands. There are significant new funds for AIDS research," she continued, noting "21 percent more last year and another 6 percent increase this year. There is a stronger commitment to breast cancer research, including funding for hundreds of new projects in this area." The Human Genome project rises by 18 percent in the President's new budget, she said.

Stressing that the reform plan assures reliable financing for academic health centers as well as for clinical trials, Mrs. Clinton concluded by saying: "We have to fight off those who would undermine our commitment to basic research, who would engage in gimmicks like balanced-budget amendments that would decimate many of the functions that we believe are important to investing in the future.... What we hope you will do, as scientists and researchers and doctors," she asserted, "is to take a stand on what you know and what

you care about, and that is the commitment you have given your lives to of improving health, of unlocking the mysteries that surround disease, of helping to cure and prevent all that ails each of us as we move through our lives."

Following applause for the First Lady, NIH Director Varmus praised Mrs. Clinton as "a powerful teacher about health-care reform, a wonderful student of molecular biology and genetics—A's for both." He described her visit to NIH as a reaffirmation "of the traditional alliance between the students of basic biology and chemistry and those who would foster wonderful health for our nation."

Varmus continued: "I hope this is only the first of many steps in a partnership that will exist between those of you who are advancing the case of health-care reform and those of us who want to improve the nation's health through basic medical research.

"I hope you'll come to see us again," Varmus said, adding: "Next time bring the spouse."—DSG

Job Plight Exaggerated, NSF Board Report Says

For a muddled discussion of the job market for PhD scientists and engineers, it's hard to top the newly published *Science Indicators: 1993*, a serial production of the National Science Board, policymaking body of the National Science Foundation [see In Print, P. 8]. Otherwise clear and reliable, the latest *Indicators* alternates between scoffing at reports of job shortages and documenting the dearth.

The subject of shortage versus glut is a sensitive one for NSF and its Board, which through most of the 1980s prophesied horrendous shortages of scientists and engineers unless more money for minting PhDs were forthcoming. When Congressmen puzzled by reports of unemployed PhD constituents finally challenged the shortage reports, an embarrassed Foundation abruptly ended its S&T procreation campaign. But apparently it still has difficulty dealing with the realities of the R&D job market.

Though published two weeks ago, *Indicators* states: "Doctorate-holding scientists and engineers have an extremely low unemployment rate. The 1991 [sic] unemployment rate for all these scientists and engineers was 1.4 percent—far below the overall US unemployment rate of 6 percent."

Why did the National Science Board rely on three-year-old data in making emphatic assertions about PhD joblessness in a report published in 1994? The situation recalls the drunk who searched under the lamp post for his far-away keys, because of the superior lighting there. The Science Board accepted the 1991 statistics because they were the latest—even though rendered obsolete by the end of the Cold War, deficit-reduction pressures, and numerous credible reports of a downturn in the job market—which are frequently referred to in the report, though dismissed for unexplained reasons.

Says *Indicators*: "The most recent comprehensive, statistically valid doctoral employment data are for 1991; 1993 data are not yet available. There is a smattering of data collected by professional associations that points to a tightening of the PhD job market in the 1990s." Then it goes on to contest the validity of reports about poor job opportunities in the R&D economy.

"Although scientists have been vocal in their complaints about the lack of jobs, few data are currently available to support their contentions," says *Indicators*."

"Underemployment of doctoral scientists and engineers is also rare," the report continues. "In 1991, only 1.7 percent of doctorate-holding scientists and engineers in the workforce were either (1) holding part-time positions when they would have preferred working full time, or (2) working in non-S&E occupations when they would have preferred S&E jobs. However, underemployment in the social sciences was relatively high—3.5 percent; it was even higher in the social science subfield of sociology/anthropology."

Indicators reports, "Despite these numbers, several professional associations have been documenting employment

The New Math: Bad Jobs

With the PhD math market in a deep slump, and universities indulging in penny-pinching tactics, the Council of the American Mathematical Society (AMS) has deplored the "systematic hiring of unemployed PhDs part-time at substandard salaries," and denounced the practice as "reprehensible and exploitative."

The statement, contained in a resolution adopted January 11, does not name any academic sweatshops, but criticizes the spreading use of one-year appointments as incompatible with wholesome conditions for career development.

"The systematic use of one-year appointments to fill regular teaching positions has the potential for exploitation of those holding such positions," the resolution states, adding:

"Although many institutions are under severe financial pressure, this should not be used as an excuse for exploitation. In particular, the practice of hiring unemployed PhDs by the course, without integrating them into the scholarly life of the department, is seriously detrimental to the individuals and the profession."

difficulties faced by new PhD recipients, focusing on one issue in particular—the lack of permanent, full-time positions in academia."

A footnote in *Indicators* elaborates on this gripe, stating that the "most vocal of these associations is a relatively new organization called the Young Scientists Network" [SGR editor's note: founded by a postdoc physicist alumnus of the Naval Research Laboratory—Kevin Aylesworth; tel. 617/491-9872].

The footnote concedes that "similar concerns" are shared by the American Institute of Physics, the American Chemical Society, and the American Mathematical Society. The ACS, *Indicators* says, reports that unemployment among new PhD chemists has been "increasing sharply in recent years," while the AMS reports unemployment of new degree recipients "at an all time high of 5 percent in 1992."

"According to these groups," the report goes on, in a manner that suggests it is merely repeating bizarre contentions, "competition among new PhD recipients for each tenure-track opening is fierce; many new doctorate-holders are becoming increasingly discouraged after long, unsuccessful job searches."

Maintaining its skeptical tone about reports of job shortages, *Indicators* states that "the apparent oversupply of doctoral scientists in some fields is being blamed on perceived cutbacks in basic research funding; growth of big science projects; the exodus of scientists from the former Soviet Union and Eastern Bloc countries (an already overcrowded job market is being flood by these new arrivals);

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NIH, Italian Partner Defend Placebo in Vaccine Trial

The National Institutes of Health and its Italian counterpart, the *Istituto Superiore di Sanita*, have responded with wondrous rationales to SGR's disclosure of their collaboration on pertussis-vaccine trials in which 1550 Italian infants received placebos instead of the highly effective anti-whooping cough shots in use in the US [SGR, January 15: "Dubious Ethics in NIH's Foreign Vaccine Trials"].

Based on an enrollment of 15,550 infants, the trials involved a deal in which the Italians provided the babies and the US provided the money—\$11.5 million, delivered to the *Istituto* by the NIH National Institute of Allergy and Infectious Diseases. The trial planners anticipated that 5 percent of the placebo children would come down with whooping cough. The shots were administered in 1992-93, with the results to be monitored until 1995.

NIAID went abroad because the inclusion of a placebo rendered the vaccine trial illegal, as well as unethical, in the US, where pertussis shots are recommended by the Centers for Disease Control and Prevention and required in all states. Italy, along with Sweden, where similar NIH-financed trials were also conducted, satisfied NIAID's need for a population with the low vaccination levels that would facilitate testing of traditional versus bioengineered vaccines.

As reported in SGR's account, which was extensively quoted on the NBC *Today* program on January 20, the NIAID proposal for inclusion of a placebo was initially rejected as

PhD Unemployment

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tight state budgets that have resulted in cutbacks and hiring freezes at state-supported institutions."

Regarding reports of doctoral scientists "reluctantly taking second and third postdoctoral research positions," *Indicators* states: "The most recent NSF data (which covers years through 1991), however, do not show a sizeable increase in the number of postdoctorate appointments."

This favorable news, however, is followed by a footnote reporting an American Chemical Society survey which found that "the proportion of new chemistry PhD recipients taking postdoctorate positions increased from 34 percent in 1990 to 37 percent in 1991 to 45 percent in 1992." The report notes, too, that "beginning salary offers to doctoral degree candidates may indicate a plentiful supply of applicants for available jobs."

The essence of the job problem, *Indicators* suggests, is an unwillingness among scientists to take jobs in industry, where, according to "labor market experts, and even fellow members of the S&E community ... there is no shortage of challenging work opportunities for doctoral scientists." A footnote adds, "Most physicists do find work in physics, although the jobs they get may not have been their first choice."

Someone should sound reveille for the Rip van Winkles at the National Science Foundation.—DSG

unethical by researchers at the *Istituto*. But they came around when NIAID explained that it was placebo or nothing, with the dummy shots and trial vaccines to accompany the mandatory diphtheria and tetanus vaccinations (DT).

The Italian apologia is contained in a paper sent to SGR by Guiseppe Vicari, Director General of the *Istituto*. Titled "The Ethics of the Pertussis Vaccination Trial in Italy," it concedes that "It is true that the inclusion of this DT [placebo] group underwent a strong debate in the *Istituto*, as it needed to be, considering the important implications of the choice.

"But," the Italian statement continues, "the value of obtaining precise information on efficacy of the vaccines clearly outweighed the risks of having a small group of unvaccinated children, given the low national [vaccination] coverage." Citing approval of the trials by the Italian National Bioethical Committee, the statement asserts, "Precision and timeliness in providing the information required has indeed been felt as a strong ethical issue in favor of the inclusion of the DT [placebo] group."

The American statement, issued by the NIAID Office of Communications, is a sterling bit of obfuscation, asserting, for example, that the Italian and Swedish "trials do not have a placebo arm, that is, one in which the children receive inactive material. All children enrolled in the Italian and Swedish trials receive at least the DT vaccine. In both trials, the percentage of children who do not receive any form of pertussis vaccine is considerably less than the percentage of the general population who do not receive pertussis vaccine."

Later on the statement asserts: "Inclusion of a control group is essential to firmly establish efficacy of a candidate vaccine and is standard practice in the conduct of vaccine efficacy trials."

The NIAID statement notes that vaccination programs have strikingly reduced the annual incidence of pertussis in the US—from 200,000 in the 1940s to 6000 in 1993. But, it explains, public concerns about possible side effects of the older whole-cell vaccines "have resulted in decreased use in many parts of the world where it is not mandatory, such as in Western Europe." The purpose of the trials, NIAID added, was to test the safety and efficacy of the new, acellular vaccines against the widely used cellular version.

The tests were conducted abroad, NIAID continued, because "the number of cases of pertussis occurring in the United States is so small as to render an efficacy trial impossible to perform." Stating that the results of the trials "are eagerly anticipated throughout the world," the NIAID statement predicts that if they prove safe and effective, "the use of these products will have a profound impact on the control of pertussis, particularly in countries such as Sweden and Italy where the acceptability of the current whole-cell vaccines is poor."

The trials, with the inclusion of the placebo groups, were approved by the requisite ethical-review bodies in all the participating countries, the statement emphasizes.

To Editor: Jury Out on New Role for DOE Labs

SGR [Feb 1: "In First Year, Clinton Puts His Mark on Federal R&D"] states, "Heroic, though probably futile, efforts are under way to adapt the Department of Energy's weapons labs to peacetime tasks and close collaboration with industry."

As Associate Director of Engineering and Technology Transfer at Lawrence Livermore National Laboratory (LLNL), I am very familiar with what's going on at the weapons labs, and I believe your characterization of the effort as "futile" is premature.

All of the labs have been diversifying their programs over the last 10 years and are truly multiprogram, multidisciplinary R&D organizations today. Four years ago, when we began our Technology Transfer Programs in earnest, the big questions revolved around whether industry was interested in teaming with the labs and whether the culture of the labs could adapt to work with the private sector.

Speaking for LLNL, I can say that the experience of the last four years indicates that the answer to both of those questions is closer to yes than no. I admit that the jury is still out and the verdict that counts will, in fact, be given by our industrial partners. At this point we have not finished enough projects to yield a meaningful verdict, but

the trends are positive so far.

However, two significant trends have occurred. First, industry is willing to team with the labs, as has been demonstrated by the fact that we typically have 5-10 times as many industrial partners willing to team with us in 50-50 cost-shared projects as we can afford to support on our limited DOE Technology Transfer budgets.

Second, our laboratory employees are very enthusiastic about working with industry. I have been at LLNL for 20 years and have not seen a single program that has generated as much grass-roots enthusiasm among employees as has technology transfer.

As a final point, I believe that the ultimate role for the labs in the area of economic competitiveness lies at the intersection of public policy and private-sector interest. We have developed a strategy that defines this "niche market," which is described in a paper, "Industrial Grand Challenges: A Competitiveness Strategy for the DOE National Laboratories." Copies are available to your readers.

Send requests, to my attention: Lawrence Livermore National Laboratory, PO Box 808, Mail Stop L-151, Livermore, Calif. 94551-9900; tel. 510/422-8351; fax 510/423-1114.

Roger W. Werne

Job Changes & Appointments

NIH Director Harold Varmus has announced three major administrative appointments on the Bethesda, Md., campus:

Alan T. Leshner as Director of the National Institute on Drug Abuse. Leshner formerly was Deputy Director of the National Institute of Mental Health and previously served at the National Science Foundation. He is a psychologist, a rare breed as chief of an NIH institute.

Wendy Baldwin as Deputy Director for Extramural Research, top post for overseeing NIH's grant and training programs, which she has held on an acting basis since June 1993. With the new appointment, Baldwin will step down from another job, Deputy Director of the National Institute of Child Health and Human Development. Baldwin holds a PhD in demography.

William Paul as head of the Congressionally centralized AIDS program at NIH, succeeding **Anthony Fauci**, who doubled as chief of AIDS research and Director of the National Institute of Allergy and Infectious Diseases (NIAID). Fauci retains the latter post. Paul is Chief of the NIAID Laboratory of Immunology.

Soon to be announced by the White House: the nomination of a new Deputy Director for the National Science Foundation—**Anne C. Petersen**, Vice President for Research and Dean of the Graduate School, University of Minnesota. Petersen, a statistician and researcher on adolescence, would succeed **Frederick M. Bernthal**, a holdover

from the Bush Administration.

Shirley Malcom, Head of the Directorate for Education and Human Resources Programs at the American Association for the Advancement of Science, has been nominated by the President for membership on the National Science Board, policy body for the National Science Foundation. Upon confirmation, she would fill the vacancy left by the resignation in 1991 of James Holderman, former President of the University of South Carolina (appointments move slowly on the august NSB). Coming up May 10, the expiration of eight appointments on the 24-member Board.

At the Congressional Office of Technology Assessment: **Sean Tunis**, MD, has moved up from Senior Analyst to Manager of the Health Program, succeeding **Clyde Beheny**, who has been appointed Assistant Director of the Health, Life Sciences, and the Environment Division.

GAO Probe Set on Feder, Stewart

The General Accounting Office, investigative arm of Congress, has agreed to look into the banishment of Ned Feder and Walter Stewart from fraud-pursuit duties at the National Institutes of Health, according to Senator Chuck Grassley (R-Iowa), Capitol Hill's foremost "whistleblower" protector. The pair, noted for their dogged investigations of misconduct, were involuntarily assigned to administrative duties last year after the NIH management decided it had had enough of their free-wheeling activities. Grassley invoked the Whistleblower Protection Act in requesting the inquiry.

In Print

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geographical distribution of the funds, institutional type of recipients, etc. Instructions are included for obtaining the data electronically.

Order the printed version from: National Science Foundation, Division of Science Resources Studies, Publications Unit, Arlington, Va. 22230; tel. 703/306-1773; fax 703/644-4278.

An Analysis of the Administration's Health Proposal (81 pp., no charge), from the Congressional Budget Office (CBO), a generally favorable review of the Clinton plan, though with the caution that it is "difficult to anticipate the outcome of even modest changes in existing [health-care] programs." In the inflammatory atmosphere around health-care politics, however, the CBO's assessment was upstaged by opponents of the Clinton reforms, who emphasized two relatively minor points in the analysis: coverage of the uninsured would initially raise overall spending before cost-saving measures restrained health-care expenditures, and the employer-financed insurance mandated for workers in the Clinton bill should be categorized as a tax—though distinguished, like Social Security, from general tax revenues.

The CBO analysis briefly describes but does not comment on the Clinton proposals to provide support for graduate medical education and academic health centers and to create a National Council on Graduate Medical Education to authorize residency positions by specialty in programs that receive federal money.

Also from the CBO: **The Total Costs of Cleaning Up Nonfederal Superfund Sites** (46 pp., no charge), prepared in anticipation of the expiration October 1 of the federal Superfund program, for which the Environmental Protection Agency has placed nearly 1300 locations on a National Priorities List. The CBO estimates public and private cleanup costs from 1993 through 2070 at \$230 billion in inflation-adjusted dollars. But it notes that different counting criteria have produced far different estimates from EPA and the University of Tennessee. Throughout the report, CBO stresses the uncertainties of cleanup costs, starting with the eventual number of cleanup sites, now variously estimated between 2300 and 7800, and cost savings from technological advances.

Order from: Congressional Budget Office, Publications, 2d and D Sts. SW, Washington, DC 20515; tel. 202/226-2809; fax 202/226-2714.

SSC Termination Plan (63 pp., no charge), from the Department of Energy, the burial program for the Superconducting Super Collider, for which the "total termination cost" is stated to be \$695,002,000—a figure that suggests fine fiscal precision where, of course, none exists, nor ever did, in this tragi-comedy of particles and politics. The price cited is exclusive of settling an unspecified account with the State of Texas, which provided some of the \$1 billion it

pledged for the project. DOE says it has \$735 million "available for termination," but in death as in life, SSC finances invite profound skepticism. The misbegotten venture started out in the late 1980s with a price estimate of \$4.4 billion; the figure had nearly tripled when Congress decreed the end last year, after about \$2 billion had been spent. The termination plan covers severance pay for the staff, temporary extension of benefits, reemployment assistance, disposal of the site, etc.

Order from: US Department of Energy, Public Inquiries Office, PA-5, 1000 Independence Ave. SW, Washington, DC 20585; tel. 202/586-5575; fax 202/586-1843.

Science and Technology Policy Year Book: 1993, from the American Association for the Advancement of Science (414 pp., \$15.95 for AAAS members; \$19.95 for others), original and recycled articles, Congressional reports and statements, speech texts, etc., by public officials, academics, and others in and around S&T policy affairs. Contributors include Clinton's S&T Advisor, John Gibbons, and his predecessor, D. Allan Bromley; Alice Rivlin, Deputy Director of the Office of Management and Budget; Rep. George Brown, Chairman of the House Science, Space, and Technology Committee; Linda Wilson, President of Radcliffe College; Ian Ross, President Emeritus, AT&T Bell Labs, and Cornelius Pings, President of the Association of American Universities. Overall, a useful volume for illuminating Washington's quest for post-Cold War research policies and Clinton's emphasis on promoting industrial technology. The volume was edited by Albert Teich, Stephen Nelson, and Celia McEnaney, of the AAAS Committee on Science, Engineering, and Public Policy.

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In Print

Official reports and other publications of special interest to the research community

(Copies of publications listed here are available from the indicated sources—not from SGR)

Science Indicators: 1993 (NSB 93-1; 514 pp., no charge), bigger than ever, the federal government's 11th biennial compilation of numerous measures of R&D and related activities—budgets, patents, university enrollments and degrees awarded, employment, publications, high-tech trade, public attitudes toward science, etc. This edition puts more emphasis on international comparisons and also contains data on defense conversion. Assembled by NSF's Division of Science Resources Studies and issued by the National Science Board, NSF's board of directors, *Indicators* is the standard reference in science-policy deliberations. The big volume, a mix of commentary, charts, and tables, is carefully indexed and attractively printed. It is not flawless—see P. 4.

Order from: National Science Foundation, Publications Office, Arlington, Va. 22230; tel. 703/306-1130; fax 703/644-4278.

A Competitive Assessment of the President's FY 1995 Federal R&D Budget: Continuing Investment for Economic Growth and Competitiveness (10 pp., no charge), from the Council on Competitiveness, Washington outpost of high-tech industry and big-league academe, cheers for the R&D part of Clinton's '95 budget, about which the Council notes: "In contrast to the Cold War years, where the fallout from investments in defense, space and basic research were of serendipitous benefit to civilian technology, today civilian technology itself is the target for direct investment." In presenting the big, round numbers and trends in the budget, the Council quibbles only over the Administration's long-term growth plans for the National Science Foundation, complaining that after the 6 percent increase proposed for next year, NSF's planned budget line dips for the next two years. "This slower rate of growth," says the Council report, "falls short of inflation and does not keep pace with the Council's recommended time frame for significantly increasing NSF funding."

Also from the Council: **Economic Security: The Dollars and Sense of US Foreign Policy** (80 pp., \$25, plus \$1.50 for shipping), a denunciation of lingering export controls, with case studies on ceramic semiconductor packages, computers, missile technology, machine tools, etc.

Order from: Council on Competitiveness, 900 17th St. NW, Suite 1050, Washington, DC 20006; tel. 202/785-3990; fax 202/785-3998.

Space Science: Causes and Impacts of Cutbacks to NASA's Outer Solar System Exploration Missions (GAO/NSIAD-94-24; 40 pp., no charge), from the General Accounting Office (GAO), a post-mortem on NASA's Comet

Rendezvous Asteroid Flyby (CRAF), terminated two years ago for the usual reasons—swollen costs, extended timetables, and smaller appropriations than the space agency had expected. CRAF was part of Cassini, a major solar-exploration project that survives, with costs now estimated at "less than \$1.5 billion," according to the GAO. However, with Clinton's 1995 budget proposing a \$250 million reduction in NASA's previously crimped spending plans, there's no guaranteed haven in the space program, not even for the Space Station, which has been reduced to a fraction of its original, grandiose design. The CRAF report was requested by the House Science, Space, and Technology Committee.

Also from the GAO: **Space Projects: Astrophysics Facility Program Contains Costs and Technical Risks** (GAO/NSIAD-94-80; 14 pp., no charge), this one reviews NASA's Advanced X-ray Astrophysics Facility (AXAF), planned as a complement to the Hubble Space Telescope, and, of course, struggling through the cost and scope truncations that have become routine in the space business. In February 1992, the GAO reports, NASA estimated AXAF's total development and operational costs at \$5.6 billion, but after a re-do into two satellites and missions in September 1993, the price was stated to be \$2.6 billion. The GAO says that if everything works out as planned, AXAF will be a success, but notes that reserve funds for coping with surprises are skimpy and that as now designed, AXAF I cannot be repaired in orbit. The report was requested by House and Senate space and appropriations committees for NASA.

Prescription Drugs: Companies Typically Charge More in the United States Than in the United Kingdom (GAO/HEHS-94-29; 52 pp., no charge), reports that prices for identical drugs were generally much lower in the UK than in the US. Based on a survey of factory prices for 77 "frequently dispensed drugs," the GAO says it found that 66 were higher in the US than in the UK and 47 of these were priced more than twice as high. Britain's lower prices are due to "regulatory constraints," i.e., price-setting and profit limitations by the National Health Service, the GAO says. The report states, "Pharmaceutical manufacturers' officials and industry experts agree that cost differences are not a major factor in determining prices for individual drug products." The GAO report was requested by Rep. Henry Waxman (D-Calif.), Chairman of the House Subcommittee on Health and the Environment, in conjunction with recent hearings on health-care reform. Also available, a 1992 GAO report: **Prescription Drugs: Companies Typically Charge More in the United States Than in Canada** (GAO/HRD-92-110; 37 pp., no charge).

Order from: USGAO, PO Box 6015, Gaithersburg, Md. 20884-6015; tel. 202/6000; fax 301/258-4066.

Federal Funds for Research and Development: Fiscal Years 1991, 1992, and 1993 (NSF 93-323; 332 pp., no charge), from the National Science Foundation, over 200 tables reporting expenditures by 33 federal agencies on the physical, life, and social sciences and engineering, plus
(Continued on Page 7)

